

CLAIMS

1. (Previously Presented) A processing system for performing addition and subtraction within limits upon a shared value comprising:

means for performing a first uninterruptible operation upon the shared value stored in an affected reservation location, the first uninterruptible operation using an operand;

means for comparing a resulting value of the first uninterruptible operation stored in the affected reservation location to an upper value and a lower value to determine if the resulting value is within a range defined by the upper value and the lower value that can be changed;

means for performing a second uninterruptible operation to restore the affected reservation location if the resulting value of the first uninterruptible operation is not within the range defined by the upper value and the lower value;

means for reporting a failure if the resulting value of the first uninterruptible operation is not within the range defined by the upper value and the lower value;

means for performing a third uninterruptible operation to update an actual value location if the resulting value of the first uninterruptible operation is within the range defined by the upper value and the lower value;

means for performing a fourth uninterruptible operation to update an unaffected reservation location if the resulting value of the first uninterruptible operation is within the range defined by the upper value and the lower value; and

means for reporting a success if the resulting value of the first uninterruptible operation is within the range defined by the upper value and the lower value.

1 2. (Previously presented) The processing system of claim 1 wherein the first,
2 second, third, and fourth uninterruptible operations are LOCK XADD operations.

1 3. (Previously presented) A processing system for performing addition and
2 subtraction within limits upon a shared value comprising:

3 means for receiving an operand;

4 means for performing a first uninterruptible operation upon the shared
5 value stored in an affected reservation location, the first uninterruptible operation
6 using the operand;

7 means for comparing a resulting value of the first uninterruptible operation
8 stored in the affected reservation location to an upper value and a lower value to
9 determine if the resulting value is within a range defined by the upper value and
10 the lower value that can be changed;

11 means for performing a second uninterruptible operation to restore the
12 affected reservation location if the resulting value of the first uninterruptible
13 operation is not within the range defined by the upper value and the lower value;

14 means for reporting a failure if the resulting value of the first
15 uninterruptible operation is not within the range defined by the upper value and
16 the lower value;

17 means for performing a third uninterruptible operation to update an actual
18 value location if the resulting value of the first uninterruptible operation is within
19 the range defined by the upper value and the lower value;

means for performing a fourth uninterruptible operation to update an unaffected reservation location if the resulting value of the first uninterruptible operation is within the range defined by the upper value and the lower value; and means for reporting a success if the resulting value of the first uninterruptible operation is within the range defined by the upper value and the lower value.

4. (Previously presented) The processing system of claim 3 wherein the first, second, third, and fourth uninterruptible operations are LOCK XADD operations.

5. (Currently Amended) A method for performing addition and subtraction within limits upon a shared value comprising the steps of:

performing a first uninterruptible operation upon the shared value stored in an affected reservation location, the first uninterruptible operation using an operand;

comparing a resulting value of the first uninterruptible operation stored in the affected reservation location to an upper value and a lower value to determine if the resulting value is within a range defined by the upper value and the lower value that can be changed;

if the resulting value is not within the range defined by the upper value and the lower value:

performing a second uninterruptible operation to restore the affected reservation location, and reporting a failure; and

if the resulting value is within the range defined by the upper value and the lower value;

performing a third uninterruptible operation to update an actual value location;

19 performing a fourth uninterruptible operation to update an
20 unaffected reservation location, and
21 reporting a success.

1 6. (Previously Presented) The method of claim 5 wherein the first, second, third,
2 and fourth uninterruptible operations are LOCK XADD operations.

1 7. (Previously Presented) A computer readable medium containing computer
2 readable code comprising:

3 a code segment for performing a first uninterruptible operation upon the
4 shared value stored in an affected reservation location, the first uninterruptible
5 operation using an operand;

6 a code segment for comparing a resulting value of the first uninterruptible
7 operation stored in the affected reservation location to an upper value and a lower
8 value to determine if the resulting value is within a range defined by the upper
9 value and the lower value that can be changed;

10 a code segment for performing a second uninterruptible operation to
11 restore the affected reservation location;

12 a code segment for reporting a failure if the resulting value is not within
13 the range defined by the upper value and the lower value;

14 a code segment for performing a third uninterruptible operation to update
15 an actual value location if the resulting value is within the range defined by the
16 upper value and the lower value;

17 a code segment for performing a fourth uninterruptible operation to update
18 an unaffected reservation location if the resulting value is within the range defined
19 by the upper value and the lower value; and
20 a code segment for reporting a success if the resulting value is within the
21 range defined by the upper value and the lower value.

1 8. (Previously Presented) A processing system for performing addition and
2 subtraction within limits upon a shared value, the processing system comprising:
3 a processor configured for
4 performing a first uninterruptible operation upon the shared value
5 stored in an affected reservation location, the first uninterruptible
6 operation using an operand;
7 comparing a resulting value of the first uninterruptible operation
8 stored in the affected reservation location to an upper value and a lower
9 value to determine if the resulting value is within a range defined by the
10 upper value and the lower value that can be changed;
11 performing a second uninterruptible operation to restore the
12 affected reservation location if the resulting value of the first
13 uninterruptible operation is not within the range defined by the upper
14 value and the lower value;
15 reporting a failure if the resulting value of the first uninterruptible
16 operation is not within the range defined by the upper value and the lower
17 value;

18 performing a third uninterruptible operation to update an actual
19 value location if the resulting value of the first uninterruptible operation is
20 within the range defined by the upper value and the lower value;
21 performing a fourth uninterruptible operation to update an
22 unaffected reservation location if the resulting value of the first
23 uninterruptible operation is within the range defined by the upper value
24 and the lower value; and
25 reporting a success if the resulting value of the first uninterruptible
26 operation is within the range defined by the upper value and the lower
27 value.

1 9. (Previously presented) A method of performing subtraction or addition within
2 limits, the method comprising:
3 receiving an operand from a processing thread;
4 performing a first uninterruptible operation upon an affected reservation
5 location, the affected reservation location including a first instance of a shared
6 first value, the first uninterruptible operation being configured to generate a
7 second value by subtracting the operand from or adding the operand to the first
8 instance of the shared first value;
9 comparing the generated second value in the affected reservation location
10 to one or more limit values stored in one or more limit locations;
11 performing a second uninterruptible operation to restore the shared first
12 value in the affected reservation location if the second value is not within any of
13 the one or more limit values;

reporting a failure if the second value is not within any of the one or more
limit values;

performing a third uninterruptible operation to update a second instance of
the shared first value stored in an actual value location if the second value is
within the one or more limit values, the actual value location being a memory
location shared by a plurality of processing threads; and

performing a fourth uninterruptible operation to update a third instance of
the shared first value stored in an unaffected reservation location if the second
value is within the one or more limit values.

10. (Previously presented) The method of claim 9, further including reporting a
success if the second value is within the one or more limit values.

11. (Previously presented) The method of claim 9, wherein the one or more
limit values consist of an upper limit value and a lower limit value.

12. (Previously presented) The method of claim 9, wherein the first
uninterruptible operation is configured to generate the second value by adding the
operand to the first instance of the shared first value.

13. (Previously presented) The method of claim 9, wherein the first
uninterruptible operation is configured to generate the second value by subtracting the
operand from the first instance of the shared first value.

1 14. (Previously presented) The method of claim 9, wherein the operand has an
2 absolute value greater than one.

1 15. (Previously presented) The method of claim 9, wherein performing the
2 second uninterruptible operation includes using a negative of the operand.

1 16. (Previously presented) The method of claim 9, further including choosing
2 the first affected reservation location on which to perform the first uninterruptible
3 operation, responsive to whether the method is being used to perform a subtraction or
4 addition.

1 17. (Previously presented) The system of claim 1, further including means
2 configured for choosing the first affected reservation location on which to perform the
3 first uninterruptible operation, responsive to whether the system is being used to perform
4 a subtraction or addition.